

Response to Office Action Mailed January 9, 2008  
Submission under 37 C.F.R. 1.114  
U. S. Application No. 10/569,560

### REMARKS

The Final Office Action of 9 January 2008 rejected claims 1, 2, and 4-10 under 35 U.S.C. § 103 as being obvious over several references, including primarily the Daido and Pearce references in combination with the Otto reference. Applicant responded to the Final Office Action on 3 March 2008 by presenting amendments and remarks in support of the patentability of the proposed amendments. On 21 March 2008, the Office issued an Advisory Action indicating that the proposed amendments of 3 March 2008 would not be entered and that the prior action remained final. Applicant now presents the present Response as a Submission under 37 C.F.R. 1.114 in conjunction with a Request for Continued Examination. Applicant notes that the amendments presented in this Response and Submission differ from those of the prior response. Applicant expressly requests that the prior amendments not be entered and that the present amendments be considered as the pending claims for the purposes of the Continued Examination. Applicant further notes that the present Response and Submission is being filed within the time period (three months) set forth in the Final Office Action as the period for reply. Accordingly, this Response and Submission is timely filed.

Valve apparatus claims 1, 2, and 4-10 remain in the application. Claim 1 has been amended to further clarify the relationship between and the configurations of the two passages through the valve body. Claim 4 was amended to correct the claim dependencies following the cancellation of Claim 3, which was cancelled in a prior submission. Applicant respectfully submits that the amendment to Claim 1 distinguishes Claim 1 from the disclosures and teachings of Daido, Pearce, and Otto, as well as the other cited references. At least some of the distinctions will be described in greater detail below. However, Applicant's failure to call out or otherwise comment upon one or more features of the presently amended claims in these remarks is not intended to be a concession that such features are not distinguishing over the presently cited references.

As Claim 1 is the only independent claim, Applicant's remarks here will focus on the patentability of Claim 1. The Final Office Action relied upon Otto for a teaching of a reciprocating valve comprising two passages, "wherein one passage is vertical (within element 34) and one passage is inclined (above element 66 in Figure 1)." The Office Action asserted that it would have been obvious to modify the valve of Daido with the passages of Otto since changing the angles of passages merely requires ordinary skill and since changing the angles would result in a predictable outcome. Applicant understands this language to be rejecting

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U. S. Application No. 10/569,560

Claim 1, essentially, as being merely the simple substitution of one known element for another to obtain predictable results. Applicant submits that the features of the present amendment are not shown in the cited references and are therefore not a known element available for simple substitution. Moreover, Applicant submits that the cited references fail to teach any rationale or motivation for modifying their respective teachings to suggest features or elements recited in Claim 1.

Applicant submits that Otto, Daido, Pearce, and the other references fail to disclose, teach, or suggest a non-axial passage having a vertical and inclined geometry leading up to an intersection [with the bore] that is adapted to resist particle accumulation in the non-axial passage. Applicant has reviewed the disclosure of Otto and considered the region above element 66 of Otto's Fig. 1 (the portion of Otto's valve relied upon in the Office Action for disclosure of an inclined passage). Applicant notes that Claim 1 now recites that the vertical and inclined passage geometry of the non-axial passage is adapted to resist particle accumulation in the non-axial passage. Assuming *arguendo* that Otto's region above element 66 can be referred to as a valve passage, Applicant notes that this region (referred to as reservoir 64 by Otto at column 3, lines 56-65) includes multiple steps and tiers and constitutes more of a tortuous path than an inclined passage. While the reservoir 64 includes several inclined surfaces, it is not an inclined passage adapted to resist particle accumulation. For example, the region 64 above the element 66 would accumulate particles on any one of the many horizontal surfaces illustrated in Fig. 1.

Applicant notes that Otto discloses a valve having inlet port 14 and outlet port 16 and having two alternative flow paths between the ports. The primary flowpath is substantially continuous through the vanes 34 of the main valve member 32. The alternate flowpath is through bleed passageway 66 into reservoir 64 and down the pilot passageway 56. The pressure drop through the small aperture of the bleed passageway into the reservoir 64 from which fluid is said to exit faster than it can enter, combined with the tortuous path and obstacles leading up to the pilot passageway 56, would likely result in the precipitation and accumulation of a substantial portion of any particles that might be carried in the fluid through the bleed passageway 66 (assuming the particles did not plug the small aperture of the bleed passageway). Accordingly, Applicant respectfully submits that Otto combined with any of the prior art references would fail to disclose, teach, or suggest a vertical and inclined passage, as recited in Claim 1, that is adapted to resist particle accumulation.

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U. S. Application No. 10/569,560

While not asserted in the Office Action, Applicant respectfully submits that it would not have been obvious to one of skill in the art looking at Otto to modify the design thereof. Otto is believed to be designed for use with liquids containing no particulate impurities. As recited at column 3, lines 56-65, the element 66 is a "small aperture" or "bleed passageway" through a diaphragm that is designed to be impermeable to fluid flow. Applicant submits that if particulate impurities were in the fluid, the bleed passageway 66 would become plugged and fluid would not enter the region 64 above element 66. Accordingly, Otto's valve would be inoperative if particles were present in the fluid stream. Alternatively, if the bleed passageway was large enough to allow particles through the diaphragm, such particles would likely precipitate and accumulate on any one of the many horizontal surfaces in reservoir 64. There is no mention in Otto or the other references of fluids containing solids or particles. Accordingly, there would be no reason or motivation for one of skill in the art to modify Otto to better handle solids. Solids control or management was simply not contemplated by Otto or the other references.

Additionally, Applicant has amended Claim 1 to further recite that the non-axial passage leads up to an intersection with the bore, which intersection is configured to resist particle settling at the intersection. An exemplary configuration of this intersection is illustrated in Applicant's Fig. 1A and Fig. 1B as a vertex. The description in Applicant's specification describes this intersection as a "curved geometry [that insures] that only a small number of particles could reside at the [intersection]." In contrast, Otto's valve, as interpreted by the Office Action, includes the reservoir 64 in communication with the pilot passageway 56. The intersection between these two elements of Otto's valve is illustrated as including a horizontal segment at the top of member 34 through which the pilot passageway is defined. This horizontal segment provides a pilot valve seat 58. As discussed above, the present claims provide a slurry-tolerant valve apparatus, while Otto is simply not configured to tolerate particles or slurry. In the event that one or more particles settle on top of Otto's pilot valve seat, the particles would prevent Otto's pilot valve sealing member 68 from effectively sealing. Reference to Applicant's specification reveals that this is one of the problems addressed by the present application. Here again, Otto fails to disclose, teach, or otherwise suggest a feature of Claim 1. Applicant has been unable to identify any of the other references that teach an intersection so configured and a passage so adapted. Accordingly, Applicant respectfully submits that the elements of the present Claim 1 are not shown in the cited references, whether taken alone or in combination. Moreover, Applicant submits that modifications to the prior art are not suggested or motivated by any one or more of the cited references.

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Applicant respectfully submits that determinations of obviousness under 35 U.S.C. §103 require an analysis of the claimed invention as a whole. The traditional *Graham v. John Deere* test instructs us to consider the differences between the claimed invention and the prior art when determining obviousness. Looking for the differences between the invention and the references often leads to the conclusion that just one element is missing from the cited art. That one missing element can often be found in isolation if the entirety of the available references is considered for individual elements. However, the obviousness test still prohibits the use of hindsight to piece together a claimed invention from a multitude of disparate references. Whether the test to avoid hindsight is recited as 'consider the claim as a whole,' or 'teaching, suggestion, motivation,' or some other construction that guides applicants and examiners through the obviousness analysis, the determination requires that each element of the claimed invention be available from the teachings of the cited references.

In the present case, none of the references cited disclose or otherwise make available to one of skill in the art a valve having two passages with one of the passages being a non-axial passage having a vertical and inclined geometry adapted to resist particle accumulation and having an intersection configured to resist particle settling at the intersection. The references that include a non-axial passage include horizontal passages in which particles will accumulate over time. Moreover, the only reference (Otto) to disclose an arguably inclined passage discloses that the passage is a bypass or bleeder passage only utilized as a pilot valve having a configuration certain to lead to particle accumulation and or incomplete seal of the pilot valve due to settling of particles on the valve seat. Applicant respectfully submits that while changing the angles of passages in a valve may be accomplished or implemented with relative ease once conceived, there is no teaching or suggestion in the cited references of a valve having a non-axial passage according to the recitations of Claim 1. As obviousness still requires some teaching in the art of each element of the claim, Applicant respectfully submits that a *prima facie* case of obviousness has not been established for the presently amended Claim 1. Accordingly, Applicant respectfully submits that Claim 1 is allowable and requests withdrawal of the rejection under 35 U.S.C. §103.

Applicant notes that Claims 2 and 4-10 depend from Claim 1 and therefore incorporate all of the elements therein. Applicant submits that these claims are similarly allowable for at least the reasons discussed above. Applicant requests withdrawal of the rejections under 35 U.S.C. §103 of Claims 2 and 4-10.

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Applicant believes that this application is in condition for allowance in view of the amendments presented herein and the remarks above. In light of the accompanying Request for Continued Examination, Applicant respectfully requests that the present application be reconsidered in light of these amendments and remarks. Moreover, Applicant respectfully requests that the Examiner contact the undersigned attorney if the Examiner has any questions or if a telephonic interview would advance the prosecution of the present application.

Respectfully submitted,

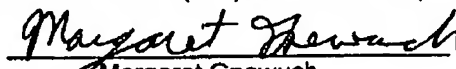
  
Douglas W. McArthur, Registration No. 50,795  
Attorney for Applicant

ExxonMobil Upstream Research Company  
P.O. Box 2189  
CORP-URC-SW359  
Houston, Texas 77252-2189  
Telephone: 731-431-4657

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Margaret Gnewuch